

DETERMINANTS OF CITYWARD MIGRANTS' FERTILITY: THEORY AND EVIDENCE

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INTRODUCTION

A. Objectives of the Study

Urbanization — the increase in the proportion of a given population classified as urban — has been associated with a decline in fertility levels. A difference between urban and rural fertility is not only common but also tends to be an inverse relationship between fertility and size of community.¹ Even in many of the less developed countries, such a pattern exists (United Nations, 1965, p. 124). It is unquestionable that urban environment had led to a reduction of human fertility, although in early stages of urbanization there is evidence of higher urban than rural fertility in certain areas (United Nations, 1973, p. 91). Urbanization refers to the process whereby an increasing proportion of a country's population moves to cities. It constitutes a change of environment for a substantial portion of the population which may result in changes in the value placed on large families.

Relatively little is known about the determinants of fertility for rural-to-urban migrants in either developed or developing countries. Most research on the association between fertility and migration has sought to relate fertility of urban in-migrants to a few demographic characteristics, such as age or age at marriage, and to compare fertility of urban natives. Not only is the evidence on determinants inconclusive but also it does not adequately explain why a differential fertility of

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¹The difference in rural and urban fertility levels has lessened or even disappeared in certain more developed countries. Probably the fertility gap is greatest in the transitional periods of development.

migrants and nonmigrants exists. Indeed, Vincent Whitney (1969) has commented:

In particular, we know very little about the features of family life upon which decisions about the ultimate number of children and their birth timing depends in different settings. We know equally little about the factors within marriage which contribute to a desire for a particular number and sex distribution of children and which motivate husbands and wives sufficiently to translate ideals into actualities (pp. 254-255).

This study is concerned with the interrelationships between migration and fertility in Taiwan. It attempts to analyze the nature and causes of the changes in reproductive behavior associated with migration. The principal focus is on rural-to-urban migrants.

The general lack of research on the causal factor affecting differential fertility of migrants and nonmigrants is due in part to the absence of data adequate to show the socioeconomic characteristics of individuals which are related to migration and the associated changes in reproductive behavior. Most data used for such a study are derived from censuses, which usually do not provide sufficiently detailed information. The limitation of needed data is a key problem in making a full causal analysis.

Taiwan provides a suitable locale for the present investigation for three reasons. First, Taiwan had had detailed demographic and socioeconomic data in 1973 for both macro- and micro-levels, a circumstance which permits us to undertake this research. Second, higher levels of fertility among rural than among urban population still persist in Taiwan, even though migration between these areas has been substantial. Third, being an island, Taiwan approximates a closed population to the extent that there has been little immigration and emigration (with the exception of the migration of some college students to the United States and Japan) in the past two decades. Moreover, the culture itself is rather homogeneous: 98 percent of the population is of Chinese origin and 85 percent is Taiwanese by birth.

B. A Brief Review of Previous Research

Studies of migrant fertility in urban areas date back to the early decades of the twentieth century (Thomas, 1938, p. 138). Thereafter, the interest of social

scientists in this issue seemed to dwindle, and today there are a great many studies concerning the relationship between migration and fertility (for a comprehensive bibliography see Myers and Macisco, 1975, pp. 221-231). In this section, we briefly review some of these studies.

Several studies in the United States have found an inverse relationship between size of community and fertility, and there is evidence that rural-to-urban migrants have higher fertility than urban natives. Using data from the 1940 census on the fertility of native white females of reproductive age classified by residence in 1935, Kantner and Whelpton (1952, pp. 152-187) found that among migrants to Indianapolis fertility was inversely related to the size of the previous community in which couples had spent most of their time since marriage. They also found that city in-migrants had higher fertility than urban nonmigrants. Research by Goldberg (1959, pp. 214-222) in Detroit has shown that urban in-migrants of rural origin have higher fertility than their counterparts in the place of destination. Analysis of data from the 1955 Growth of American Families Survey indicated that for those who were not then living on a farm but among whom either spouse had had farm experience, fertility was only slightly higher than among couples with no farm experience (Freedman, Whelpton and Campbell, 1959, pp. 314-315). A similar result was found by Duncan (1965) in his work on the 1962 current population survey. Among these studies, only Duncan presented data for the rural population at origin which indicated a considerably lessened fertility of rural-to-urban migrants. However, the objective of these studies was to examine the relationship between socioeconomic status and fertility rather than the effects of environmental shifts on fertility.

Not all studies in the United States found that urban in-migrants of rural origin have higher fertility than do urban natives. The first detailed study by Kiser (1938, p. 381) indicated that "the urban marital fertility among native white individuals who moved from villages and rural areas to cities before marriage was not higher than that observed among city-born individuals of comparable age and social status." Similarly, using data from the Indianapolis study, Goldberg (1960, pp. 23-36) found that rural-to-urban migrants had lower fertility than urban natives.

In Latin America most of the studies generally indicated that migrants had higher fertility than did natives regardless of place of birth, and rural migrants had

higher fertility than other migrants. A study conducted in large metropolitan areas in southern Brazil by Hutchinson (1961, pp. 182-189) showed that migrants to these areas had higher fertility than urban nonmigrants. He also indicated that the inverse relationship between social class and fertility is not a reflection of rural-to-urban migrants. A similar finding emerged from analysis of data for San José, Mexico City, Caracas, and Buenos Aires where rural migrants had higher fertility than urban migrants and the latter had had slightly more children than urban natives (Myers, 1966). However, Zarate (1967) concludes that fertility is not related clearly to duration of residence in Monterrey, Mexico.

Some studies in Puerto Rico and in a few developing Asian countries have consistently indicated that city in-migrants of rural origin have lower fertility than urban natives. Based on the 1960 census data in Puerto Rico, Myers and Morris (1966) found that migration was associated with a decline in fertility levels. Three years later, Macisco, Bouvier, and Renzi (1969) secured special 1960 census tabulations and introduced education as an additional control variable. The results showed that non-metropolitan migrants under age 34 had lower cumulative fertility than nonmigrants at these areas, even if education was controlled. However, the relationship is reversed for the female population aged 35-44. They explained that this reversal or "cross-over" is attributed to older women arriving within the last five years, having spent most of their reproductive life in a non-metropolitan area. This analysis was extended by Macisco, Bouvier, and Weller (1970) to consider the role of labor force participation as an intervening variable. They found that lower migrant fertility compared to that of nonmigrants in San Juan is not wholly attributable to educational or occupational differentials (p. 64). In Thailand, research by Goldstein (1973) indicated that compared to nonmigrants in Bangkok fertility levels of lifetime migrants are not very different but those of five-year migrants are considerably lower. Hendershot (1971) has analyzed urban migration and fertility in the Philippines by using survey data for Manila and two rural communities and found that migrants have lower fertility than natives in Manila, and that difference is not explained away by age or marriage-duration differentials of the two groups.

In Taiwan the study of the effect of rural-to-urban migration on fertility has been relatively unexplored. There are, however, two studies which have dealt with the relationship. In an intensive survey of migrants to Taichung City and of

nonmigrants in the area surrounding the city, Speare (1969, p. 104) found that migrants of rural origin have slightly lower fertility than do rural natives after controlling for duration of marriage. Another study which deals with the relation between residence background and fertility indicated that exposure to an urban environment for rural migrants lead to lower fertility than that of nonmigrants either at the place of origin or destination after adjustment for age and education (Chang, 1980, pp. 35-70).

Recently Alvan Zàrate and Alicia Unger de Zàrate (1975) systematically reviewed the literature and generalized three important reasons of the disagreement:

- (1) The failure to exercise elemental precautions in comparing findings resulting from significantly different research procedures.
- (2) The failure to evaluate findings in either historical or comparative perspective.
- (3) The notable absence of systematic frameworks or organizing schemes (pp. 144-145).

In sum, the existing literature is not adequate to provide a guideline for research in this field because of the many unresolved contradictions.

THEORETICAL FRAMEWORK AND MAJOR HYPOTHESES

A. Theoretical Framework

There are at least two theoretical orientations which have guided the research in this area. One of those stems from a sociological viewpoint. In Ronald Freedman's (1963) words:

One of the fundamental principles of sociology is that when many members of a society face a recurrent common problem with important social consequences they tend to develop a normative solution for it. This solution, a set of rules for behavior in a particular situation, becomes part of the culture, and the society indoctrinates its members to conform more or less closely to the norms by implicit or explicit rewards and punishments (p. 222).

Following this passage, human fertility at the aggregate level is viewed as

shaped by a group's cultural prescription and social organization. Each type of region within a country with distinct social organization may be viewed as a subculture which affects normative values about reproductive variables. In the formative years the major implantation of norms relating to marriage and childbearing occurs as part of the socialization process, and the subculture supports or changes these behavioral dispositions through the structural configuration of social relationships in the later years. Thus the life cycle of a migrant to the end of the childbearing years may be divided into two phases: (1) before migration, a period of socialization and value formation at place of origin; (2) after migration, a part of childbearing years and possibly earlier years in which structural mechanisms at place of destination may lead to revisions in the values developed in the place of origin.

As a person moves from one type of area to another, for example, from a rural to an urban area, structural mechanisms may frequently no longer support values and behavioral orientations developed at his place of origin. In other words, an environmental shift could bring cross pressures from two different socializing subcultures for the migrant. Thus the immigrant is, to a degree, resocialized and his behavior altered. In this perspective, the assimilation of urban life patterns for rural-to-urban migrants tends to bring about changes in the valuation of reproduction and family size norms. Similarly, it can be assumed that the ability to plan births is improved. In turn, these are eventually reflected in the modification of migrant fertility behavior towards a closer approximation of the patterns which prevail among the nonmigrants at the place of destination. However, the degree of resocialization for the migrant may depend on length of residence at his place of destination. As length of residence increases, the assimilation of life style at the migrant's destination will be greater.

Another line of explanation focuses on underlying differentials in the socioeconomic characteristics between migrants and nonmigrants which would cause the observed fertility differences between two groups (Macisco, Weller and Bouvier, 1970). To be more specific, migrants may differ importantly from nonmigrants in such crucial fertility determining characteristics as education, occupation and other indices of socioeconomic status. In the opinion of social researchers controlling for these characteristics would eliminate migrant-native fertility

differences. Since the one explanation is concerned with establishing the existence of differentials and the other addresses itself to explaining why differences exist, these explanations may be viewed as complimentary rather than as alternatives. In the present study we shall be considering both.

As mentioned previously, the findings from previous empirical research have generally supported the first theoretical explanation, that is, that migrants' fertility is determined by environmental influences. Left unexplained, however, is the disagreement in previous work as to the lower fertility of rural migrants than urban natives, even when the important background characteristics such as education are held constant. This suggests the fact that fertility differences between migrants and nonmigrants could be described by differences in such intervening variables as family organization, social mobility, life style and peer group values.

Migration is often held to be associated both with modernization and changes in family structure. Historically, rural-to-urban migration has constituted one means of adjustment to the increasing rural population pressure frequently resulting from technical innovation and the high rate of natural increase associated with declining mortality in the face of continuous high fertility. This adjustment varies in detail from one country to another. Universally, however, a major consequence of rural-to-urban migration has been the shift of employment and income opportunities from agricultural to other activities (United Nations, 1973, p. 201). Although relatively little is known about many aspects of the process of rural-to-urban migration in currently developing countries, there is a consensus among demographers that, for adults, it is primarily in response to economic concerns. This view is clearly expressed by Donald Bogue (1965):

There seems to be general agreement that three key variables are involved in migration flows: employment, income, and rapid population growth. Migrants flee from areas where employment opportunities are stagnant, where income is low and where the rate of population growth is high (p. 163).

A case study of a city in Taiwan by Speare (1973) indicated that rural-to-urban migration during the period 1965 through 1967 appears to have been motivated primarily by rational economic considerations such as the expectation of better paying jobs in the city.

Nevertheless, it is suspected that rural areas in Taiwan are unevenly affected by processes of modernization or development and that these differentials affect the subsequent economic achievement of migrants from different areas. To be more specific, migrants whose moves have been initiated by "push" factors in the places of origin achieve lower economic statuses than those being initiated by "pull" factors.

Now let us consider intervening social variables which may affect the relation between migration and fertility.

There are several reasons to expect that migration weakens extended families:

(1) In the process of industrialization and development, the growing job opportunities in urban areas mean an increase for rural migrants. There is increasing awareness of migration as an alternative to working on a farm. When the move is from rural area, some family members will usually remain behind and continue to till the land. Also, it is unlikely that jobs for all members of an extended family can be found in one city at one time. Therefore, unless household division has already occurred, migration can mean a nuclear family established at the place of destination.

(2) As modernization proceeds, there is a general rise in the educational levels of the younger generation. It is more difficult to retain the labor of highly educated young adults on the farm. Migration in response to job opportunities provides an alternative way for the person who wishes to form an independent nuclear family to do so (Levy, 1965, p. 313).

(3) A person who moves to seek a job in another locale before marriage usually leaves his parents behind. Unless he can not find a job and returns to his home, a new nuclear family will be established by his marriage.

A shift in residence from a rural to an urban place can be expected to have an impact on the life style and attitudes of an individual. The urban place, especially the large city, has a greater concentration of industries and commercial, financial and administrative facilities and activities and recreational agencies such as the press, radio stations, theaters, hospitals and higher educational institutions. Thus,

urban people have more chances to be exposed to modern influences than do rural people. For immigrants into cities, the life style and traditional attitudes established at the place of rural origin could be greatly modified by the influence of the urban environment.

Several studies in Taiwan have shown that household structure, life style and modern attitude have been associated with lower fertility level (Freedman, Sun and Chang, 1982, pp. 395-411; Chang, 1985, pp. 19-45). It seems applicable to use some of their measures for this study.

B. Hypotheses

Following the above reasoning, we may hypothesize that: (1) the more dissimilar to urban environment is the environment at the origin of migrants, the greater the fertility differences expected between migrants and urban nonmigrants and (2) as length of residence in the city increases, the greater the influence of urban "milieu" and thus the less the differences in fertility behavior between migrants and urban natives.

An alternative hypothesis is that rural-to-urban migration itself has no impact on desired or expected family size and actual fertility behavior. Under this hypothesis, the fertility differentials between migrants and nonmigrants, either at place of origin or destination, are mainly due to the differences in background characteristics and to the selectivity of low-fertility couples as migrants.

The alternative hypothesis has its rationale in four factors. First, as was indicated earlier, migration is viewed as a response to real or perceived economic opportunities. It is, of course, related to career mobility. In theory, a person who has the desire to improve his position or income would be more likely to have fewer children than one not undergoing mobility because social mobility may be more feasible with one or two children than with a large number. Westoff and others have pointed out that the birth and raising of children require time, money and energy which could otherwise be spent in upgrading a family's economic and social standing (Westoff, Potter, Sagi and Mishler, 1961).

Using various measures of upward social mobility, such as occupational or income shifts, many researchers have found an inverse relationship between upward mobility and fertility. For example, Berent (1952) used sample survey data for England and Wales in 1949 to examine fertility performance related to changes in both individual and inter-generational status. He found that when social origin was held constant, upward mobility was associated with lower fertility. Moreover, those who moved to a higher social class between the time of marriage and time of interview had lower fertility than those who had never experienced upward social mobility.

However, several studies have indicated that there is no impact of social mobility on fertility. A reexamination of Berent's study on occupational mobility and fertility in England [Blau (1956) and Duncan (1966, pp. 30-95)] has found that there is no mobility effect underlying the fertility of mobile couples other than the additive combination of the fertility patterns of the two origin and destination occupational levels. A similar finding is reached from the analysis of data on the American 1962 Occupational Changes in a Generation survey (Blau and Duncan, 1967, pp. 367-399).

Second, like many developing countries, Taiwan has reached a point in its agricultural development in which there is little additional arable land available. The rapid growth of rural population resulting from the combined effect of high fertility and sharply lower mortality after World War II had resulted in decreasing farm size, given the system of inheritance; and thus, in the aggregate, the increased pressure of numbers on land resources. According to the recent statistical data of Taiwan, the average unit size of farm acreage decreased steadily from 1.17 hectares in 1956 to 1.02 hectares in 1980. Although innovations in agricultural technology and a more intensive use of farm land have somewhat relieved this pressure, the high population growth rate has washed out these contributions and resulted in under-employment in farm families. Fung (1970), on the basis of a study of Taiwanese labor force data for 1956-66, concluded that there was surplus labor with low marginal productivity on small farms and in small retail establishments in Taiwan. This typical case of such underemployment has been described as that where many family members, working on small farms or peasant plots, contribute virtually nothing additional to farm outputs but subsist on increasingly smaller shares of their family income. Under such conditions, it is a fortunate circumstance when a

diminishing need for agricultural labor had been matched by a correspondingly increased need for industrial labor in the more rapidly expanding urban-based sector. Rural-to-urban migration has meant the rough adjustment of labor supply, which at the outset was predominantly rural, to labor demand in urban areas. Using areal data at the township level, Speare (1974, p. 305) has shown that net out-migration to urban places in Taiwan was highest from areas where the highest percentage of males was employed in agriculture. This indicates that rural-to-urban migrants are from areas with lower levels of development.¹ If the "push" factors are more important than the "pull" factors, the poor economic situation at the rural origin may depress the fertility of migrants before they move to cities.

Third, migration is often selective of persons with specific demographic and socioeconomic characteristics such as age, sex and education. Using published data from household and migration records in Taiwan, Speare (1974, pp. 311-316) found that during 1967-1968 young adults (both males and females) were most migratory and that migrants had better education than nonmigrants at place of origin. Since fertility is related to the socioeconomic status of individuals, fertility differentials between migrants and nonmigrants can be partially explained by differences in these variables.

Fourth, costs of migration are positively associated with size of family. In general, a couple with few children should find it easier to move than one with many children because moving and housing costs are substantially higher for a big family than for a small one. A given income offered at the place of destination may be more attractive to smaller than to larger families simply because the income is more likely to cover costs of migration and living for a smaller family.

Based on the preceding discussions, we may expect that the fertility of rural-urban migrants will be intermediate between the fertility of those nonmigrants, at place of origin and at place of destination, who have backgrounds similar to that of the migrants.

¹ Measured by the percentage of persons engaged in farming.

DATA AND VARIABLES

The data for this study come from the 1980 Taiwan KAP-V fertility survey based on a probability sample with 3,816 respondents of all married couples in which the wife was between 20 and 39 years old in 1980¹. The sample covers 331 of Taiwan's local areas, excluding only 30 areas inhabited by aborigines. For the present analysis the sample was restricted to couples in which both the wife and husband were Taiwanese (excluding couples with either spouse a Mainlander). The sample is also restricted to rural-to-urban migrants and their nonmigrants' counterpart at the place of origin and destination.

Independent Variables

Indicators of migration status, background and current characteristics used in the analysis were as follows.

1. Migration status

In this study I plan to focus on lifetime migration as the principal measure of migration. I think that this should be a relatively good measure since the frequency of moving is not likely to be particularly high on a lifetime basis. As far as the type of place variable is concerned, I will use four categories: large cities (composed of Taiwan's five largest cities), small cities, urban townships, and rural townships. Lifetime migration, which is constructed on the basis of the type of area of wife's birth compared with the type of area of current place of residence, is classified into 20 streams: native born nonmigrants living in the four types of areas and migrants born in four types of areas (excluding couples with either spouse a Mainlander) and currently living in different types of areas or same type of area but different districts or townships, i.e., born in rural townships and migrated to other rural townships. For this study, however, nonmigrants currently living in

¹The survey was carried out by the Taiwan Provincial Institute of Family planning from December 1979 to April 1980. The response rate was 85 per cent.

the four types of areas and migrants in four migration streams (Urban township to either large or small city and rural township to either large or small city) are concerned.

2. Background characteristics

- a. Wife's education: the number of years of schooling completed by the wife.
- b. Husband's education: the number of years of schooling completed by the husband.
- c. Duration of marriage: in years.

3. Current characteristics

- a. Household structure: coded 1 if currently living in the nuclear family and gave other types of households coded as 0.
- b. Husband's yearly income: in NT\$.
- c. Wife's outside activity index: the index was constructed on the basis of frequency of movie going, restaurant eating, trips and whether wife belongs to a club membership. The index ranges from 1 to 6. The higher the index is, the higher involvement in outside activities is.
- d. Mass media exposure index: the index was constructed on the basis of exposure to newspaper, magazine, radio, and television. The index ranges from 0 to 8 indicating from least media exposure to most media exposure.
- e. Number of modern durables: sum of the following variables having code=1: stereo, transistor with record player, camera, refrigerator, motorcycle, air conditioner, color TV, gas burner, washing machine, telephone, and automobile.
- f. Importance of a male heir: coded 1 if perceiving importance of a male heir and gave all others coded as 0.
- g. Aspirations for children's education: code 1 if expecting first child to be graduated from college or above and gave all others coded as 0.

In order to minimize the possibility that any observed relationships between migration and fertility are due to both variables being influenced by other variables, three additional variables were included in the analysis as controls: wife's birth cohort; the education of wife's father; and who decided on the marriage partner—coded 1 if the couple alone and gave all others coded as 0.

Dependent Variables

A range of reproductive variables were included in the analysis:

1. Number of children ever born by 1980.
2. Number of children expected by the wife (the number of children she currently has plus the number of additional children she wants plus one if currently pregnant).
3. Wife's fertility number preference (Coombs IN scale).
4. Wife's preference for sex of children (Coombs IS scale).

The Coombs scales have been well tested and are described in detail elsewhere (Coombs, and R. Freedman, 1979, pp. 360-365). The number scale measures the number of children desired with the usual single desired number statement as only one element in a continuum of an underlying preference distribution. Similarly, the sex preference scale measures the underlying tendency to prefer males, females, or a balance of the two. Both measures have been found to predict reproductive behavior net of the effect of first preference statements and other demographic controls on a cross-section basis in many countries and, more importantly, in longitudinal studies in Taiwan and the United States.

FINDINGS

A summary of the relationships between the fertility measures and migration status, and indicators of background and current characteristics is provided in Table 1. The figures displays the zero order correlations between that variable and each of the explanatory variables. Note, that the correlation between migration status and fertility is estimated in a separate equation. That is, each simple correlation for each dependent variable is estimated in an equation that contains migrants in each stream with nonmigrants either at the place of origin or destination.

The data displayed in Table 1 are consistent with the expectation that cityward migrants from semi-rural and rural areas influence subsequent fertility. With the sole exception of 1s scale, for the migrants moving from semi-rural or rural areas to either large or small cities and their nonmigrant counterpart at the place of origin, all of the gross effects of migration on fertility are in the predicted direction and all are significant at the 0.01 level. Similarly, the effects estimated from the migrants and the urban nonmigrants are also in the predicted direction, but some correlations are not statistically significant at the 0.01 level. Substantively, this means that cityward migrants from semi-rural and rural areas have lower actual and attitude fertility (expected and preferred number of children) than that of nonmigrants at the place of origin, but similar or higher than that of urban nonmigrants. On the other hand, with few exceptions, the correlations between demographic and socioeconomic variables and four fertility measures are also in the expected direction and are statistically significant at 0.01 level. This indicated that, as education, age at marriage, independent living, involvement of the children in the choice of a spouse, income, involvement of outside activities, exposure to mass media, ownership of modern durables, perception of less importance of a male heir, and aspirations for children's higher education increase, the number of children born and wanted decline—as does the preference for boys over girls.

While all of the independent variables influence traditional fertility behavior and preferences in the expected direction, the magnitude of the effects are not uniform across either independent or dependent variables. Looking first at the dependent variables, the zero order correlation coefficients for the scale of preferences for boys over girls are generally, although not always, smaller in absolute magnitude than the coefficients for other variables, which are fairly similar in magnitude. This pattern suggests that migration status and other socioeconomic variables have more influence on actual and preferred family size than on preferences for the sex of children one might have.

There are also important differences across the independent variables in the magnitudes of their effects. In general, the coefficients for age, duration of marriage, involvement of outside activities, exposure to mass media and education variables are considerably larger than those for other variables. This general pattern

suggests these variables may be more important individual determinants of reproductive behavior and preferences than other variables.

This pattern of effects raises the possibility that birth cohort, duration of marriage and education are the major factors that have a direct impact upon reproductive behavior and preferences, while the estimated effects of migration and other socioeconomic variables on fertility listed in Table 1 are entirely due to their interrelationships with education, age and duration of marriage. That is, if all the predictors of fertility were studied with the same equation, there might only be effects for age, duration of marriage and education. A summary of an analysis investigating all of the effects simultaneously is reported in Table 2. As expected, the estimated effects of specific migration on fertility are reduced significantly and many are too small to be statistically significant by this procedure. These reductions, however, are not due to their interrelationships to age, duration of marriage and education alone. Several other socioeconomic variables such as exposure to mass media, involvement in outside activities, importance of a male heir, and aspirations for children's higher education are also salient - the coefficients for these variables maintain their expected influence on fertility and are statistically significant.

The coefficients for the migratory categories in Table 2 might be subjective to bias because of coding 1 for migrants of a particular stream and giving 0 to others which include nonmigrants and migrants in other streams. A more precise analysis was done by putting migrants in each stream being paired with nonmigrants either at the place of origin or destination and all independent variables in the same equation. It turns out that most of the coefficients are reduced substantially and many are too small to be statistically significant (Table 3). For the significant ones, however, their substantive impact might be minor. Again, these results tend to confirm that migrant-nonmigrant fertility differentials can be explained by background and current characteristics.

The previous analysis seems to suggest that the migrants are highly selective in terms of such background characteristics as age, education and age at marriage and their current socioeconomic characteristics are super than those of nonmigrants' even after taking the background characteristics into consideration. At this moment, it seems necessary to show explicitly. As expected, the migratory

selectivity is in operation. In general, migrants are younger and have higher educational levels than their semi-rural and rural counterparts, but similar to their urban nonmigrants (Table 4). Additionally, migration is in response to economic opportunities. The migrant's husband's yearly income is substantially higher than that of both urban and rural nonmigrants even after adjusting for wife's age and education, husband's and wife's father's education (Table 5). Similarly, migration in these two streams is also associated with other modern socioeconomic characteristics – more independent living, higher involvement of the children in the choice of a spouse and of outside activities, higher exposure to mass media, more modern durables and higher aspirations for children's high education than their semirural and rural nonmigrating counterparts. This is also true after adjusting for their background characteristics. This direct statistical evidence is consistent with, advanced previously, that migration is associated with changes in household types, life style and traditional familial values which, in turn, affect the fertility attitudes and behavior of migrants.

This conclusion is further strengthened by the aid of a multiple classification adjustment (MCA). The aim of this MCA analysis is, of course, only a way to the separate effects of background and current socioeconomic characteristics on each of the four fertility measures for migrants and nonmigrants in the indicated migration streams.

As shown in Table 6, the fertility differentials between migrants who moved from semirural or rural areas to large or small cities and nonmigrants at the place of origin are somewhat reduced but still exist after controlling wife's age and education as well as husband's and wife's father's education. This indicates that age and educational selectivity for the migrants only explain a part of fertility differentials between cityward migrants and their semi-rural or rural nonmigrating counterparts but not all.

On the other hand, when the current socioeconomic variables were added to background variables and migration status in the MCA analysis, the fertility differentials between the migrants in the two indicated migration and their nonmigrating counterparts either at the place of origin or destination almost disappear (Table 7). The overall net effects of the current characteristics on the fertility differentials between migrants and nonmigrants are estimated from the

increases in \bar{R}^2 (the last row of Table 7 minus the last row of Table 6). The results are consistent with the previous analysis and support the previous hypothesis--fertility differentials between cityward migrants from semi-rural or rural areas and nonmigrants either at the place of origin or destination can be explained by both better background and current modern socioeconomic characteristics for the migrants presumably gained from migration process and urban environmental influences.

The demographic significance of better background and current characteristics of migrants vs nonmigrants can be facilitated by comparing the fertility behavior and preferences predicted from the regression models for two hypothetical couples: a migrating couple who moved from a rural township to a large city and a nonmigrating couple who remained in a rural township. For purposes of illustration, these two couples have same birth cohorts and the hypothetical migrating couple with better background and current socioeconomic characteristics is defined as follows: the husband completed 16 and the wife 14 years of school; the wife married at age 25; the couple decided the marriage; they did not co-reside with the husband's parents; the husband's yearly income was NT\$200,000; the wife involved in four kinds of outside activities; they owned 8 items of modern durables; the wife perceived less importance of a male heir; she aspired her children to be graduated from college or above; and had exposed all mass media (index = 8). On the other hand, the hypothetical nonmigrating couple who lived in a rural township is defined as having no education; marriage at age 20; the parents decided the marriage, the couple co-resided with the husband's parents; the husband's yearly income was NT\$150,000; involving one kind of outside activities, ownership of 4 items of modern durables; perception of importance of a male heir; did not aspire children to be graduated from college or above; and have only exposed to few kinds of mass media (index = 3). With these hypothetical informations at hand, the demographic significance between migrant and nonmigrant can be estimated by the observed effects, the metric or unstandardized coefficients from the same equations as Table 3. For simplicity, I have just taken one equation containing number of children expected by the wife as a dependent variable and all of the individual predictor variables for the migrants moving from rural area to large city and their nonmigrating counterparts at the place of origin for illustration.

The difference between the fertility expectation of the two hypothetical

couples based upon the regression equation of Table 3 is considerable (see Table 8). The difference between the two couples in the number of children expected by the wife are little more than two children. However, the difference is reduced to about one and half children if only the coefficients with the statistical significance are taken into account. As can be seen from Table 8, the coefficients for the individual variable are relatively modest, but they imply considerable differences in several background and current socioeconomic characteristics.

The decomposition of the total difference between the two hypothetical couples into background and current socioeconomic characteristics confirms that these two components contribute to the overall difference. However, the contribution from the current characteristics with the statistically significant coefficients (wife's outside activities index, independent living, and importance of a male heir) is greater than that of background characteristics, 1.029 against 0.398 children. Among individual characteristics, the contribution of the difference in the wife's outside activities index is the most important. The duration of marriage comes next in importance followed by perception of importance of a male heir and independent living in order. Of course, these observed effects are just for migrants moving from rural townships to large cities and their nonmigrating counterparts at the place of origin. For other streams, other current socioeconomic characteristics such as exposure to mass media and children's educational aspirations are the most important (not shown here). In sum, it can be inferred that migration is associated with changes in household types, life style and traditional familial values which, in turn, affect the fertility behavior and preferences of migrants.

DISCUSSION

This analysis supports the proposition that the background and current socioeconomic characteristics influence the subsequent fertility preferences and behavior of urban in-migrants from semi-rural and rural areas and their nonmigrating counterparts either at the place of origin or destination. The migration selectivity in terms of younger ages and better education only explain a part of fertility differentials, but not all. The remaining fertility differentials, however, can be almost explained by several current or modern socioeconomic characteristics which the migrants presumably gained from migration, or urban influence.

Household structure, life style and attitudinal factors which may be connected with migration, or urban life, have quite a strong effect on fertility, independent of the age and education of the couples, and make an important contribution to the total explained variance. Independent living, more involvement in outside modern activities, a lesser preference for male children, strong aspirations for children's education, and greater exposure to mass media are all associated with at least one of the fertility measures. When these factors are considered together with wife's birth cohort, the education and marriage duration of the couples, the adjusted mean differences in number of children ever born and preferences between migrants from rural or semi-rural areas to large or small cities and nonmigrants either at the place of origin or destination appear to be negligible. That household structure, life style and attitudinal differences of migrants may be due to migration, or urban environment, is shown by the fact that controlling for age and education, city in-migrants still have higher proportion living in nuclear family, more involvement in outside modern activities, lower male preference, greater educational aspirations for children, and greater exposure to mass media than nonmigrants in semi-rural or rural areas. This statistical evidence is consistent with the hypothesis, advanced previously, that migration is weakening extended families, and for in-migrants into cities, the life style and traditional attitudes established at the place of rural origin could be greatly modified by the influence of the urban environment.

Why do migrants from semi-rural or rural areas to the cities have lower male preference and greater educational aspirations for children than nonmigrants at origin? The urban economic system provides means of support in old age, sickness, or emergencies alternative to the extended family, thus reducing need for male heirs. Also, city in-migrants have achieved higher income statuses than have nonmigrants in semi-rural or rural areas, even after their background characteristics are taken into account. Because migrants are more likely to have higher income than their nonmigrating counterparts, they may develop higher educational aspirations for children.

Aside from household structure, life style and attitudinal change, migrants' fertility may reflect the fact that the price of both food and housing is higher in urban areas than in rural areas. This would raise the relative cost of children in urban areas compared with rural. Unfortunately, no survey data on perception of cost were available to test this hypothesis.

The lower male preference and greater educational aspirations for children among city in-migrants than among semi-rural or rural natives represent change in tastes of an anti-natal nature. But why should greater involvement in outside modern activities and exposure to mass media for the migrants be anti-natal? Partly the involvement in outside modern activities and the mass media may foster attitudinal change, but they do so indirectly by providing contact with new opportunities that are available to children with sufficient education. Thus, they can encourage a shift in preferences toward raising a few children of higher quality, thus raising the price of children relative to goods. Also, the greater involvement in outside activities and exposure to mass media has an independent effect on fertility reduction for the migrants. Probably mass media may bring imagination of new life style and foster new aspirations for moderns competitive with children. Moreover, greater exposure to mass media means the migrants have more chance to learn of the population program than nonmigrants in semi-rural or rural areas. Thus, the costs of fertility regulation for city in-migrants could be lower than that of their nonmigrating counterparts.

Finally, it seems necessary to discuss whether or not the study hypotheses can be accepted. The first major hypothesis, that the fertility level of city in-migrants of rural origin is intermediate between the fertility level of nonmigrant urban and rural natives, is rejected. Several assumptions underlying this hypothesis are not in the expected pattern. For example, it was assumed that: (1) the urban environment is one in which females have more opportunities than in rural areas to work outside the home; (2) the proportion of wives who work outside the home among rural-to-urban migrants is intermediate between the proportion among nonmigrants urban and rural natives; and (3) the traditional attitudes of city in-migrants of rural origin lie between those of nonmigrant urban and rural residents. Our data do not provide support for any of these assumptions. Consequently, the hypothesis about the character of migrant-nonmigrant fertility differences is not in the expected pattern and can not be accepted.

The second major hypothesis can be accepted only in part. There is supporting evidence that exposure to urban environment tends to depress the fertility of the migrants. However, this is not consistent with the migrant-nonmigrant fertility differences actually found in the urban areas. The fertility of the urban nonmigrants is similar to that of the city in-migrants of rural origin with similar back-

ground and current socioeconomic characteristics, even though the former have lived in the urban areas longer than have the latter group.

The alternative hypothesis regarding selectivity of low-fertility couples at origin is also rejected. There is evidence that number of children ever born of the urban in-migrants from semi-rural and rural areas is similar to that of their rural counterparts, when wife's age, education and duration of the couples are taken into account. It seems unlikely that the fertility of migrants, prior to migration, was lower than that of nonmigrants at place of origin and made up their fertility after arriving in the urban destination.

The various measures employed in this study have limitations. The total number of moves is greater than those shown because of return, or repeated moves. Women who were divorced or separated do not fall in our sample. Detailed information on residential history between the place of origin and the place of destination is not available.

Table 1. Zero-Order Correlation Coefficients Between Fertility Measures and Socio-Economic Characteristics in Taiwan, 1980

Explained variable		Live births	Expected children	IN	IS
Wife's age		0.571	0.328	0.141	0.121
Duration of marriage		0.717	0.466	0.206	0.123
Wife's education (years)		-0.433	-0.376	-0.261	-0.095
Husband's education (years)		-0.353	-0.321	-0.214	-0.092
Household structure		0.047*	-0.080	-0.030	0.034*
Marriage arrangement		-0.182	-0.174	-0.175	-0.040*
Husband's yearly income		-0.154	-0.179	-0.123	-0.055*
Wife's outside activity index		-0.365	-0.335	-0.186	-0.157
Mass media exposure index		-0.376	-0.344	-0.242	-0.131
Number of modern durables		-0.234	-0.236	-0.166	-0.122
Importance of a male heir		0.223	0.245	0.153	0.121
Aspirations for children's education		-0.121	-0.211	-0.061	-0.080
Migration status and streams:					
Urban township to large city	(1)	-0.171	-0.218	-0.297	-0.04*
	(2)	0.017*	0.011*	0.045*	-0.01*
Urban township to small city	(1)	-0.119	-0.192	-0.237	0.03*
	(2)	0.013*	-0.045	0.093	0.05*
Rural township to large city	(1)	-0.191	-0.212	-0.242	-0.05*
	(2)	0.036*	0.027*	0.144	0.04*
Rural township to small city	(1)	-0.097	-0.134	-0.102	0.04*
	(2)	0.079	0.038*	0.263	0.07

*Not statistically significant at the 1% level.

(1) refers to migrants at that stream and nonmigrants at place of origin.

(2) refers to migrants at that stream and nonmigrants at place of destination.

Table 2. Standardized Multiple Regression Coefficients of Background and Current Socioeconomic Characteristics on Four Reproductive Variables

Explained variable	Live birth	Expected children	IN	IS
Wife's age	-0.088*	-0.158*	-0.039	0.088*
Duration of marriage	0.079*	0.504*	0.126*	0.005
Wife's education (years)	0.024	-0.002	-0.065	0.075
Husband's education (years)	-0.072*	-0.060	-0.053	-0.007
Household structure	-0.020	-0.090*	-0.095	0.023
Marriage arrangement	-0.018	-0.039*	-0.095*	-0.003
Husband's yearly income	0.034	0.016	-0.002	0.015
Wife's outside activity index	-0.131*	-0.111*	-0.016	-0.101*
Mass media exposure index	-0.062*	-0.060*	-0.087	-0.051
Number of modern durables	-0.019	-0.010	-0.012	-0.061*
Importance of a male heir	0.047	0.093	0.057*	0.089*
Aspiration for children's education	0.031	-0.073	-0.043*	-0.032
Migrants moving from urban township to large city and others ^a (migrants=1, others=0)	-0.180	-0.015	-0.072*	0.011
Migrants moving from urban township to large city and others (migrants=1, others=0)	0.003	-0.020	0.016	0.053
Migrants moving from rural township to large city and others (migrants=1, others=0)	0.001	-0.020	-0.032	-0.010
Migrants moving from rural township to small city and others (migrants=1, others=0)	0.007	-0.025	0.075*	0.020

*Statistically significant at 5% level.

^aOthers including migrants in other streams and nonmigrants regardless of their types of residence.

Table 3. Standardized Multiple Regression Coefficients of Migration Status on four Reproductive Variables

Migration streams	Live births	Expected number of children	IN	IS
Urban township to large city				
(1) with nonmigrants at place of origin	-0.051	-0.084*	-0.142**	0.03
(2) with nonmigrants at place of destination	-0.004	0.024	0.075	-0.017
Urban township to small city				
(1) with nonmigrants at place of origin	-0.029	-0.109**	-0.092*	0.096*
(2) with nonmigrants at place of destination	0.037	-0.014**	0.105	0.086
Rural township to large city				
(1) with nonmigrants at place of origin	0.004	-0.0149	-0.069*	0.023
(2) with nonmigrants at place of destination	0.0128	0.009*	0.129**	0.030
Rural township to small city				
(1) with nonmigrants at place of origin	-0.012	-0.025	-0.011	0.077
(2) with nonmigrants at place of destination	0.034	0.010	0.22**	0.015

Standardized regression coefficient from equations containing wife's birth cohort, duration of marriage, wife's and husband's education, household structure, marriage arrangement, husband's yearly income, wife's outside activity index, mass media exposure index, number of modern durables, importance of a male heir, aspirations for children's education and migration status.

*Significant at .05 level using one-tailed test and assumption of simple random sampling ($t \geq 1.65$).

**Significant at .01 level using one-tailed test and assumption of simple random sampling ($t \geq 3.1$).

Table 4. Couple's Age and Education by Wife's Migration Status and Lifetime Migration Streams in Taiwan, 1980

Wife's migration status and migration streams	N	% age 30 or less		% senior high or above	
		Husband	Wife	Husband	Wife
Migrants who moved from:					
Urban township to large city	220	28.2%	54.1%	39.5%	23.1%
Urban township to small city	135	39.3	64.4	37.7	21.5
Rural township to large city	280	38.9	62.6	35.0	17.5
Rural township to small city	223	40.8	60.5	39.5	12.5
Nonmigrants who lived in:					
Large city	109	42.2	63.3	32.1	22.0
Small city	106	32.1	57.5	41.4	31.1
Urban township	342	32.1	52.9	26.0	9.3
Rural township	393	30.8	51.4	17.8	7.6

Table 5. Selected Measures of Socio-Economic Characteristics by Wife's Migration Status and Migration Streams in Taiwan, 1980

Wife's migration status and migration streams	N	% living in nuclear family		Wife's current work status		Husband's yearly income		Exposure to mass media		Ownership of modern objects		Wife's outside activity index	
		Unadj. ^a	Adj. ^b	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.
Migrants who moved from:													
Urban township to large city	220	72.3%	72.1%	21.3%	20.2%	NT\$156,697	NT\$151,404	5.6	5.3	7.0	6.6	3.2	3.0
Urban township to small city	135	71.1	71.9	23.7	20.7	146,537	141,647	5.4	5.2	6.9	6.8	3.1	3.0
Rural township to large city	280	68.3	70.3	61.2	15.8	149,076	145,605	5.4	5.3	6.8	6.7	3.1	3.0
Rural township to small city	223	74.4	73.4	21.1	21.6	141,515	139,236	5.2	5.2	6.2	6.2	2.8	2.7
Nonmigrants who lived in:													
Large city	109	66.1	64.7	24.8	26.3	140,326	138,589	5.7	5.5	6.8	6.7	3.1	2.9
Small city	106	59.4	57.6	24.5	26.7	134,660	133,996	5.4	5.1	7.0	6.7	3.2	3.0
Urban township	342	45.9	45.2	24.3	25.1	119,530	122,350	4.9	5.0	6.0	6.2	2.8	2.8
Rural township	393	41.4	49.4	27.6	28.2	103,532	108,934	4.4	4.7	5.2	5.5	2.6	2.7

^aThe unadjusted values refer to the observed means in the sample.

^bThe adjusted means are estimated from MCA equations containing the migration status, the birth cohort of wife, the husband's and wife's education, and wife's father's education.

Table 5. (continued)

Wife's migration status and migration streams	% marriage decided by the couple		% importance of a male heir		% expecting children to be graduated from college or above	
	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.
Migrants who moved from:						
Urban township to large city	30.5%	29.9%	73.2	76.3	72.3	68.4
Urban township to small city	30.4	25.1	67.4	69.8	58.5	54.4
Rural township to large city	28.4	27.1	79.1	80.8	68.3	67.0
Rural township to small city	27.4	26.9	82.5	82.5	57.4	55.8
Nonmigrants who lived in:						
Large city	30.3	27.6	74.3	77.4	61.5	59.0
Small city	35.8	37.0	75.5	79.0	64.2	59.3
Urban township	13.7	14.8	82.5	80.5	55.0	56.4
Rural township	15.1	15.5	86.7	82.7	45.8	51.9

Table 6. Fertility Measures by Wife's Migration Status and Lifetime Migration Streams in Taiwan, 1980

Wife's migration status and migration streams	N	Live Births		Expected No. of Children		IN Scale		IS Scale	
		Unadj. ^a	Adj. ^b	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.
Migrants who moved from:									
Urban township to large city	220	2.53	2.57	3.02	3.10	3.79	3.87	4.92	4.96
Urban township to small city	135	2.59	2.73	3.00	3.16	3.92	4.01	5.04	5.07
Rural township to large city	280	2.53	2.66	2.99	3.07	4.03	4.13	4.95	4.96
Rural township to small city	223	2.74	2.80	3.14	3.18	4.28	4.27	5.04	5.03
Nonmigrants who lived in:									
Large city	109	2.39	2.74	2.92	3.02	3.68	3.81	4.93	4.95
Small city	106	2.56	2.66	3.08	3.15	3.72	3.86	4.95	4.98
Urban township	342	3.00	2.87	3.45	3.38	4.52	4.42	4.95	4.95
Rural township	393	3.05	2.84	3.43	3.32	4.54	4.41	5.06	5.03
\bar{R}^2			55.1%		20.0%		19.2%		17.1%

^aThe unadjusted values refer to the observed means in the sample.

^bThe adjusted means are estimated from MCA equations containing the migration status, the birth cohort of wife, the husband's and wife's education, and wife's father's education.

Table 7. Multiple Classification Analysis of the Impact of Migration on Four Reproductive Variables:
Means of Reproductive Variables Unadjusted and Adjusted for Other Variables

Migration status and migration streams	N	Live births		Expected children		IN		IS	
		Unadj. ^a	Adj. ^b	Unadj.	Adj.	Unadj.	Adj.	Unadj.	Adj.
Migrants who moved from:									
Urban township to large city	220	2.53	2.66	3.02	3.17	3.79	3.95	4.92	4.99
Urban township to small city	135	2.59	2.79	3.00	3.18	3.92	4.11	5.04	5.07
Rural township to large city	278	2.53	2.70	2.99	3.13	4.03	4.13	4.95	4.99
Rural township to small city	223	2.74	2.80	3.14	3.17	4.28	4.31	5.04	5.03
Nonmigrants who lived in:									
Large city	109	2.39	2.72	2.92	3.08	3.67	3.88	4.93	5.00
Small city	106	2.57	2.71	3.08	3.24	3.72	3.88	4.95	5.00
Urban township	342	3.00	2.86	3.45	3.33	4.52	4.40	4.95	4.92
Rural township	390	3.05	2.74	3.43	3.19	4.55	4.31	5.06	4.98
\bar{R}^2			55.5%		28.7%		24.6%		23.2%

^aThe adjusted values refer to the observed means in the sample.

^bThe adjusted means are estimated from MCA equations containing migration status and migration streams, wife's birth cohort, duration of marriage, wife's and husband's education, household structure, marriage arrangement, husband's yearly income, wife's outside activity index, mass media exposure index, number of modern durables, importance of a male heir, aspirations for children's education.

Table 8. An Illustration of the Demographic Significance of the Background and Current Socioeconomic Characteristics on the Expected Number of Children for Migrants Moving from Rural Townships to Large Cities and Nonmigrants at the Place of Origin

Explained variables	Unstandardized coefficient		Hypothetical couples		Demographic significance	
	(1)	(2)	(3)	(4)=(2)-(3)	All variables	Partial variables ^b
					(5)=(1) x (4)	
Wife's outside activities index	-0.15414*	4	1	3	-0.462	-0.462
Index for exposure to mass media	-0.04353	8	3	5	-0.218	-0.218
Husband's yearly income	0.00039	NT\$200 ^a	NT\$150 ^a	NT\$50 ^a	0.019	0.019
Number of modern durables	-0.02858	8	4	4	-0.114	-0.114
Marriage arrangement	-0.02368	1	0	1	-0.024	-0.024
Type of household	-0.23562*	1	0	1	-0.236	-0.236
Wife's education	-0.00599	14	0	14	-0.084	-0.084
Husband's education	-0.02001	16	0	16	-0.320	-0.320
Duration of marriage	0.07961*	10	15	-5	-0.398	-0.398
Importance of a male heir	0.33109*	0	1	-1	-0.331	-0.331
Children's educational aspirations	-0.04008	1	0	1	-0.040	-0.040
Migration status	-0.03173	1	0	1	-0.032	-0.032
Wife's age	-0.02675*	35	35	0	0	0
Total					-2.240	-1.429

*Significant at 1% level.

^aIn thousand.

^bVariables with their coefficients being statistically significant are considered.

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